Development of a Computer Program to Teach Critical Evaluation of Drug Studies

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Students in the health professions are often not taught the skills necessary to critically and accurately evaluate published drug studies, which are of increasing importance. The objective of this project was to develop, refine, and test a computer assisted instructional program designed to educate pharmacy and medical students to critically evaluate published drug efficacy studies. The interactive program thus far contains 10 main sections and 10 subsections. It is designed to serve as a stand-alone educational program which students can complete at their own pace. The software has currently been used and evaluated by second professional year pharmacy students using a pre-test/post-test design and a comparison group which did not receive similar instruction. Student comments have been positive overall, and learning was significantly increased by the program. The program will be further utilized and tested by second year medical students and Doctor of Pharmacy degree students.

INTRODUCTION

The scientific literature, including studies of new drugs or new uses for established drugs, has expanded to the extent that it is increasingly difficult for health care practitioners to remain up-to-date. In addition to the vast amount of useful information provided, errors frequently occur in the design and analysis of published studies [1,2]. Thorough and accurate interpretation of drug studies is essential for assuring that patients receive appropriate therapy. Health care professionals, including physicians, pharmacists and others who need drug information, must be able to detect and judge the strengths and weaknesses of published articles. However, the education of health care students in the techniques of critical appraisal of drug studies has been deficient [3,4]. The objective of this project was to develop and test an interactive software program designed to educate students to critically evaluate drug efficacy studies.

METHODS / RESULTS

The project was funded by the U.S. Department of Education (FIPSE). Authorware Professional® was used for development of the instructional program on the Macintosh computer. The subject areas identified for inclusion were: overview of types of studies; analysis of journals, titles, abstracts; patient/subject considerations; controls, design, randomization, blinding; treatment considerations, interpretation of statistics, data handling considerations, and analysis of the discussion and conclusions of an article. Development of the program began in September 1991 and continues to be refined. The program has been incorporated into an introductory drug literature course for second year pharmacy students. To determine the effectiveness of the program, pre-tests and post-tests were administered to a comparison group of pharmacy students who did not receive any instruction in drug study evaluation, with similar tests given to the group who used the program in the spring of 1993.

Mean post-test results were significantly increased compared to the pre-test scores only in the test group of students (77.4% vs. 43.6%). Students spent an average of 11 hours completing the program. They agreed that new information was learned and the descriptions and examples were clear and easy to understand. The primary negative comment was that the program was too long (for a 1 credit hour class). The program will continue to be revised, expanded, and enhanced and will also be adapted for an IBM platform. It will be used by medical students and Doctor of Pharmacy degree students beginning in the fall of 1993. It is anticipated that health practitioners who can accurately interpret published drug studies will be able to more appropriately apply the study findings to individual patients.

References

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